



HAWAII STATE DEPARTMENT OF HEALTH
HEALTHY PEOPLE - HEALTHY COMMUNITIES - HEALTHY ISLANDS

State Laboratories Division



Hawaii Environmental Forum
July 15, 2014

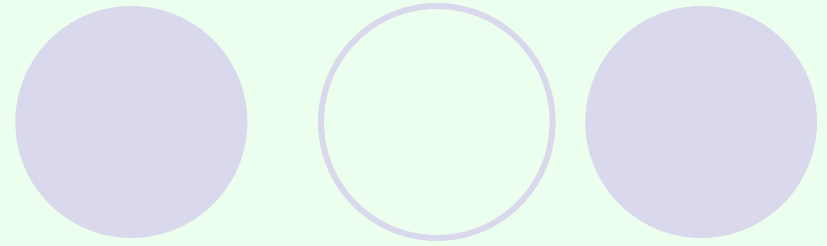
A. Christian Whelen, Ph.D, (D)ABMM

2010 DOH Team of the Year
2012 LRN Excellence in Partnership
2013 APLH Healthiest Lab Runner-up
2013 FDA Leveraging/Collaboration Award



HAWAII STATE DEPARTMENT OF HEALTH
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SLD at a glance



- Designated Critical Infrastructure by
 - State Civil Defense
 - Federal Department of Homeland Security
- Performs public health & environmental testing
- Advanced, secure 145,000 sf main laboratory
- District Labs on Maui, Big Island, and Kauai
- 100 scientists and support staff on 4 islands
- Credentialed by CDC, EPA, FDA, USDA, CMS
- Regulates Hawaii personnel & laboratories



Browser window showing the Hawaii State Department of Health Public Health & Environmental Laboratories website. The address bar displays <http://health.hawaii.gov/statelab/>. The search bar contains the text "hi doh sld". The website header includes the Hawaii State logo, the text "State of Hawaii, Department of Health Public Health & Environmental Laboratories", and a search bar. The navigation menu includes links for Home, About DOH, Neighbor Island Offices, News, and Employment.

SLD HOME

- FOR LABORATORIANS
- FOR PUBLIC
- RECOGNITION & AWARDS
- FORMS
- MEDICAL MICROBIOLOGY BRANCH
- LABORATORY EMERGENCY RESPONSE PROGRAM
- ENVIRONMENTAL HEALTH ANALYTICAL SERVICES BRANCH
- TEST MENU
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HOME PAGE FOR STATE LABORATORIES DIVISION

STATE LABORATORIES DIVISION

State Laboratories Division (SLD) conducts laboratory testing in support of environmental and public health programs statewide. Consultation, licensing, and other related laboratory services focused on environmental health and communicable disease control are provided to various federal, state, city, county, and private organizations. SLD also conducts research, laboratory science investigations, and participates in emergency response efforts such as bioterrorism preparedness and monitoring air quality effects of volcanic activity.

STATEMENT OF PROGRAM OBJECTIVE

To enhance the effectiveness of other health programs by providing specialized laboratory services to health care facilities and departmental programs and to various official agencies.

PROGRAM MEMORANDA STATEMENT

Administers a statewide laboratories program which conducts scientific analysis in support of environmental health and communicable disease monitoring and control activities. Provides consultative and other related laboratory services to departmental programs concerned with environmental and sanitation safeguards. Provides diagnostic and consultative laboratory services to physicians.

RECOGNITION & AWARDS

- National Lab Response Network Excellence in Partnership 2012
- Department Team of the Year Award 2010

HOURS OF OPERATION

Routine operations for State (Oahu) and District (Maui)

Dr. A. Chris Whelen
Laboratory Director of the State Laboratories Division

http://health.hawaii.gov/statelab/forms/

System tray shows the date 6/10/2014 and time 1:18 PM.





Organization


- Environmental Health Analytical Services Branch
- Medical Microbiology Branch
- Laboratory Emergency Response Program
- District Health Labs (Maui, Kauai, Big Island)





Online Test Menu



State of Hawaii, Department of Health
Public Health & Environmental Laboratories

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TEST MENU

CONTACT

LABORATORY TEST MENU

TEST MENU

Air Surveillance and Analysis Section

- Carbon Monoxide
- Lead
- Nitrogen Dioxide
- Ozone
- Particulate Matter (PM10 and PM2.5)
- Special Monitoring:
 - New Year Fireworks
 - VOG (volcanic haze)
 - Agricultural Burns (sugarcane)
 - Geothermal (Hydrogen Sulfide)
- Sulfur Dioxide

Biological Response Laboratory

- Antiviral resistance by pyrosequencing
- Avian influenza – birds
- [Bacillus anthracis](#)
- [Brucella species](#)
- [Burkholderia species](#)

Bacteriology and Parasitology Section

- [Aerobic Bacteria Identification](#)
- [Anaerobic Bacteria Identification](#)
- [Blood Parasite Identification](#)
- [Corynebacterium diphtheriae Identification](#)
- [Enteric bacterial pathogens](#)
- [Infant Botulism testing](#)
- [Intestinal Parasite Identification](#)
- [Legionella Culture](#)
- [Leptospira Culture](#)
- [Leptospira serology \(IgM\)](#)
- Leptospira serology (IgG; performed at Kauai District Lab)
- [Neisseria gonorrhoeae culture](#)
- Neisseria gonorrhoeae susceptibility
- [Pertussis Culture](#)
- [Pertussis PCR](#)
- [Post Mortem Culture](#)

- [Pertussis PCR](#)
- Pulsed Field Gel Electrophoresis (PFGE)
 - [Escherichia coli including E.coli O157:H7](#)
 - [Listeria monocytogenes](#)
 - [Salmonella](#)
 - [Shigella](#)
 - Vibrio cholerae
- Vaccine Preventable Diseases
 - [Influenza](#)
 - [Measles rti PCR](#)
 - [Mumps rti PCR](#)
 - Pertussis
 - VZV
- [Ricin toxin](#)
- Rule Out, Refer, Confirm BT Agents for LRN Sentinel Laboratories
- [Staphylococcus Enterotoxins \(A, B, C, D & E\)](#)
- Swine influenza – pigs
- Varicella zoster
- West Nile Virus
 - [Horse](#)
 - [Mosquito pools](#)
 - [rti RT-PCR](#)
 - [Serology](#)
- [Yersinia pestis](#)

Chemical Response Laboratory

- Chemical warfare agents and their metabolites in human specimens
- Melamine and other toxic chemicals in food
- Mercury, arsenic and other toxic metals in human specimens
- Volatile Organic Compounds in human specimens

Environmental Microbiology Water Unit

- Fecal indicators-total and fecal coliforms, E. coli
- Heterotrophic bacteria
- Shellfish growing waters
- Shellfish meats

Food Chemistry



- Pesticides analyses
- Histamine

Virology Section

- [Chlamydia trachomatis / Neisseria gonorrhoeae NAAT](#)
- [Dengue serology](#)
- Influenza rti RT-PCR
- [Measles serology \(IgM only\)](#)
- [Respiratory Viruses](#)
- [Viral Culture](#)

Water Pollution Section

- Monitoring Stream Waters And Coastal Waters For:
 - Ammonia-nitrogen
 - Chlorophyll-a
 - Dissolved Silica
 - Nitrate + Nitrite-Nitrogen
 - Salinity
 - Total Nitrogen
 - Total Phosphorus
 - Total Suspended Solids
 - Turbidity
- Monitoring Wastewaters For:
 - 5-Day biological oxygen demand (BOD)
 - Fluorescein (spill indicator dye)
 - Oil and Grease



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Environmental Health Analytical Services Branch (EHASB)

● Air Surveillance & Analysis

- Operates 18 air sampler sites primarily for 7 pollutant parameters on 4 islands for compliance with State & Federal Clean Air regulations

● Drinking Water Chemistry

- Analyze ~2300 samples annually for 17 inorganic (lead, copper, etc.) and 78 organic (pesticides, herbicides, etc.) chemical contaminants pursuant to Safe Drinking Water Act regulations





Water Pollution Chemistry

- Chemical analysis of ~2200 environmental samples annually (surface water, marine water, waste water, sewage treatment plant influent & effluent and sediment)

Food Chemistry

- Analyze several hundred food, drug, and milk samples for pesticides, adulterations, contamination & misbranding
- Test fish for histamine (Scombroid food poisoning)

Environmental Microbiology

- Analyze environmental & drinking water for microbial contaminants in compliance with State & Federal (EPA) regulations
- Dairy and shellfish testing (FDA)



Medical Microbiology Branch (MMB)

● Bacteriology & Parasitology

- Bacterial identifications for DOH disease control programs by conventional and (soon) MALDI-TOF MS
- Reference services for unusual or agents of public health significance (GC susceptibilities, leptospirosis, diphtheria, pertussis) (~25,000 annually)
- *Salmonella*, *Shigella*, *E. coli*, *Vibrio* typing for food-borne outbreak investigations and surveillance (~500 annually)

● Bacterial Serology

- Confirmatory syphilis serologies (~11,000 annually)
- Leptospirosis IgM screens
- Latent TB by interferon gamma release assay

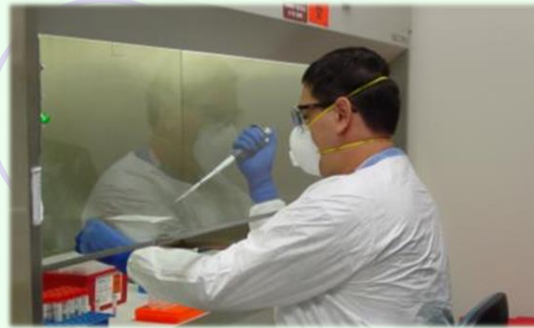


The Bacteriology Section replaces the fluorescent treponemal antibody (FTA) test with the TrepSure Enzyme Immunoassay (EIA) Test as a confirmatory test for syphilis



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MMB

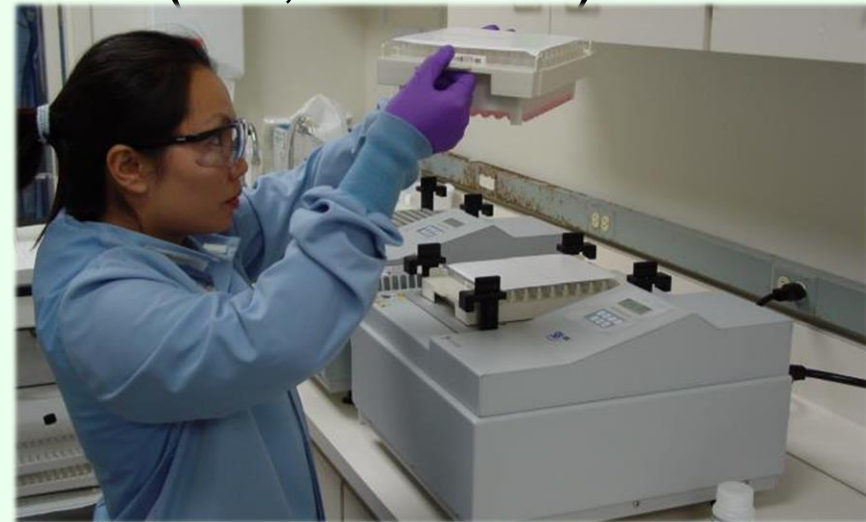


● Virology

- Conventional & molecular virus detection (rabies, enterics, lots of flu)
- Virus serology (measles, dengue, HIV, etc)
- Molecular detection of STDs (~20,000 annual)

● Mycobacteriology

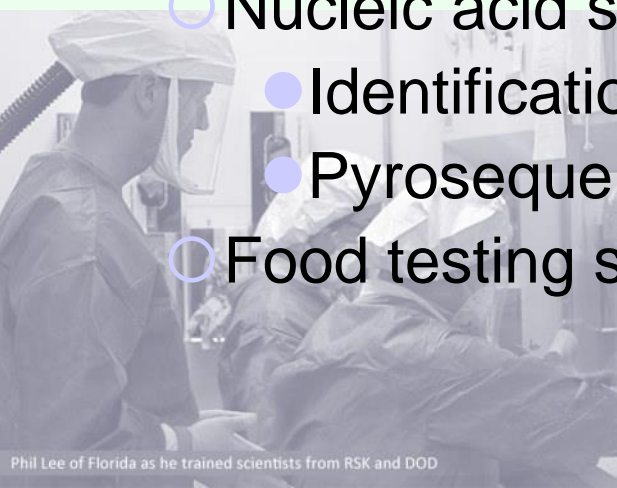
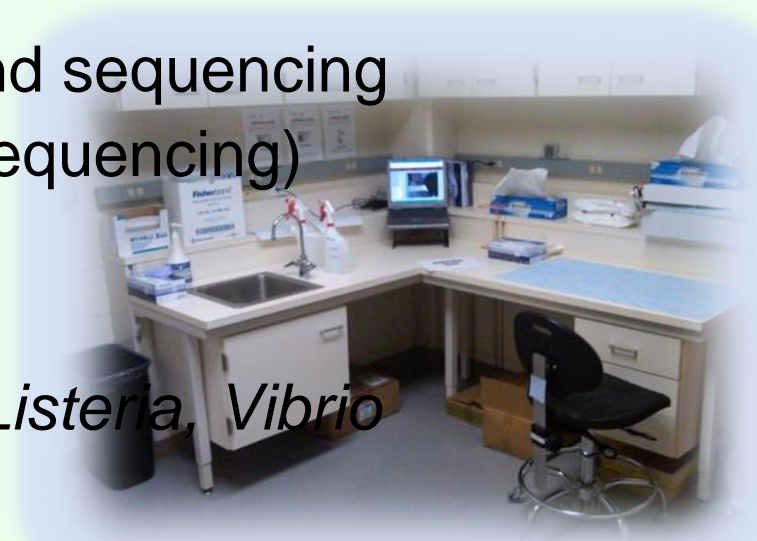
- Contracted to private lab



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Lab Emergency Response Program -BRS

- Leads the Hawaii LRN & performs bioterrorism testing
- Molecular testing for WNV, dengue, RLW, Chikungunya, pertussis, measles, mumps, etc
- Norovirus testing (rti RT-PCR) and sequencing
- Influenza (A, B, subtyping, pyrosequencing)
 - Humans, swine & birds
- DNA fingerprinting
 - *Salmonella*, *Shigella*, *E. coli*, *Listeria*, *Vibrio*
- Nucleic acid sequence analysis
 - Identification of pathogens (16s & soon NGS/WGS)
 - Pyrosequencing for drug resistance
- Food testing surveillance and outbreak testing



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LERP - CRS

○ Chemical Response Testing

- Human blood & urine
- Melamine testing

○ Biomonitoring

- 2013 Environmental Public Health Lab fellow
- Mercury and arsenic studies with WIC
- Pthalate studies in urine (D, K)
- Arsenic in toenails
- Soon: pesticides in blood/urine



Activities with DOD

- TAMC Lab & SLD mutual support
- TAMC Lab and SLD LRN Confirmatory
- Hawaii LRN with NEPMU-6, TAMC, CST
- NEMPU & TAMC alternate sites for APEC
- Certify military drinking water labs
- Analyze drinking water samples for military
- Conduit to CDC & NVSL testing
- Pacific Island / Regional lab support
- Support for BT testing of credible threats
- Joint Exercises



93rd CST Major Alvin Sato with AI



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Questions?

- Mahalo



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